

Local Power Range Monitor (LPRM) System

Chapter 5.3

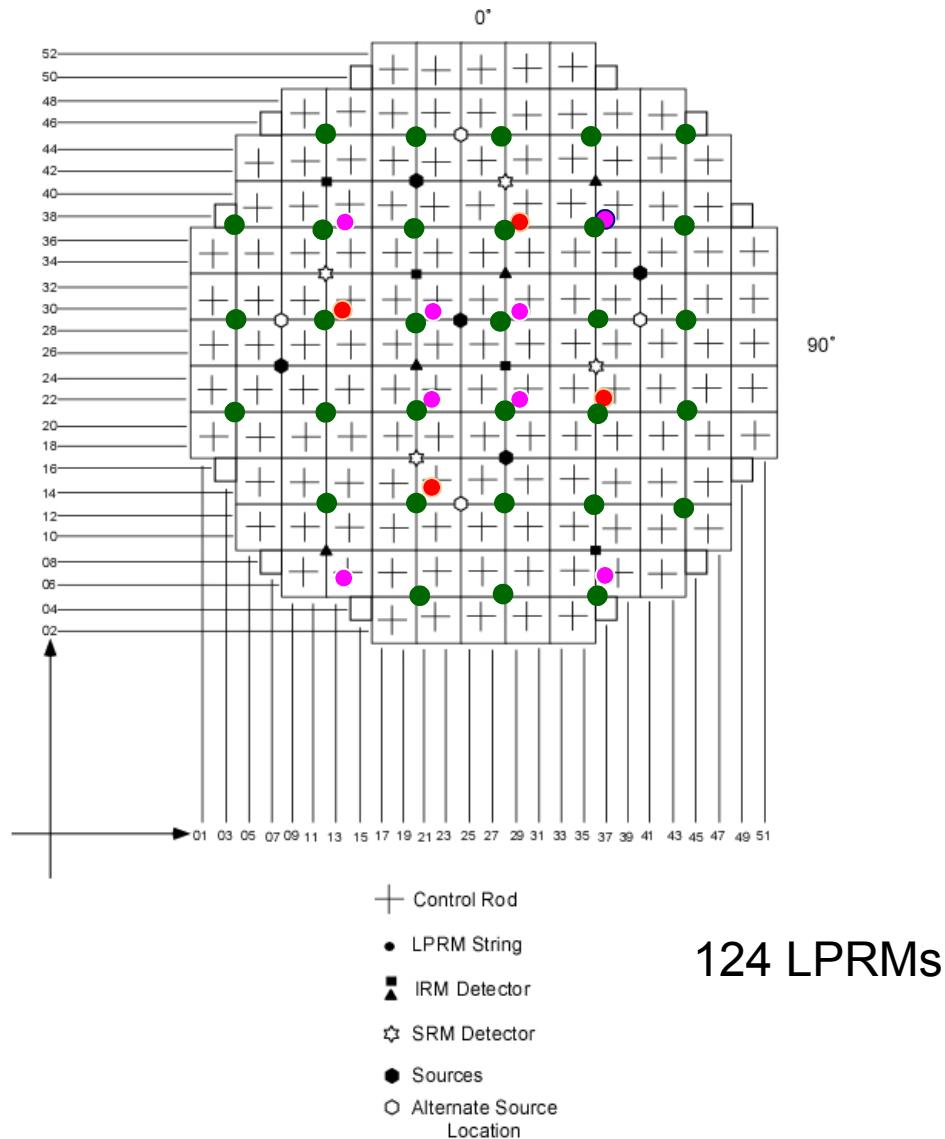
OBJECTIVES

1. State the system's purpose.
2. Explain why the LPRM's are calibrated.
3. Explain how the LPRM's are calibrated.
4. Explain the interfaces this system has with the following plant systems:
 - a. Average Power Range Monitoring System (Section 5.4)
 - b. Reactor Protection System (Section 7.3)
 - c. Rod Block Monitoring System (Section 5.5)
 - d. Traversing Incore Probe System (Section 5.6)
 - e. Process Computer System (Thermal Limits, Section 1.8)

Purpose

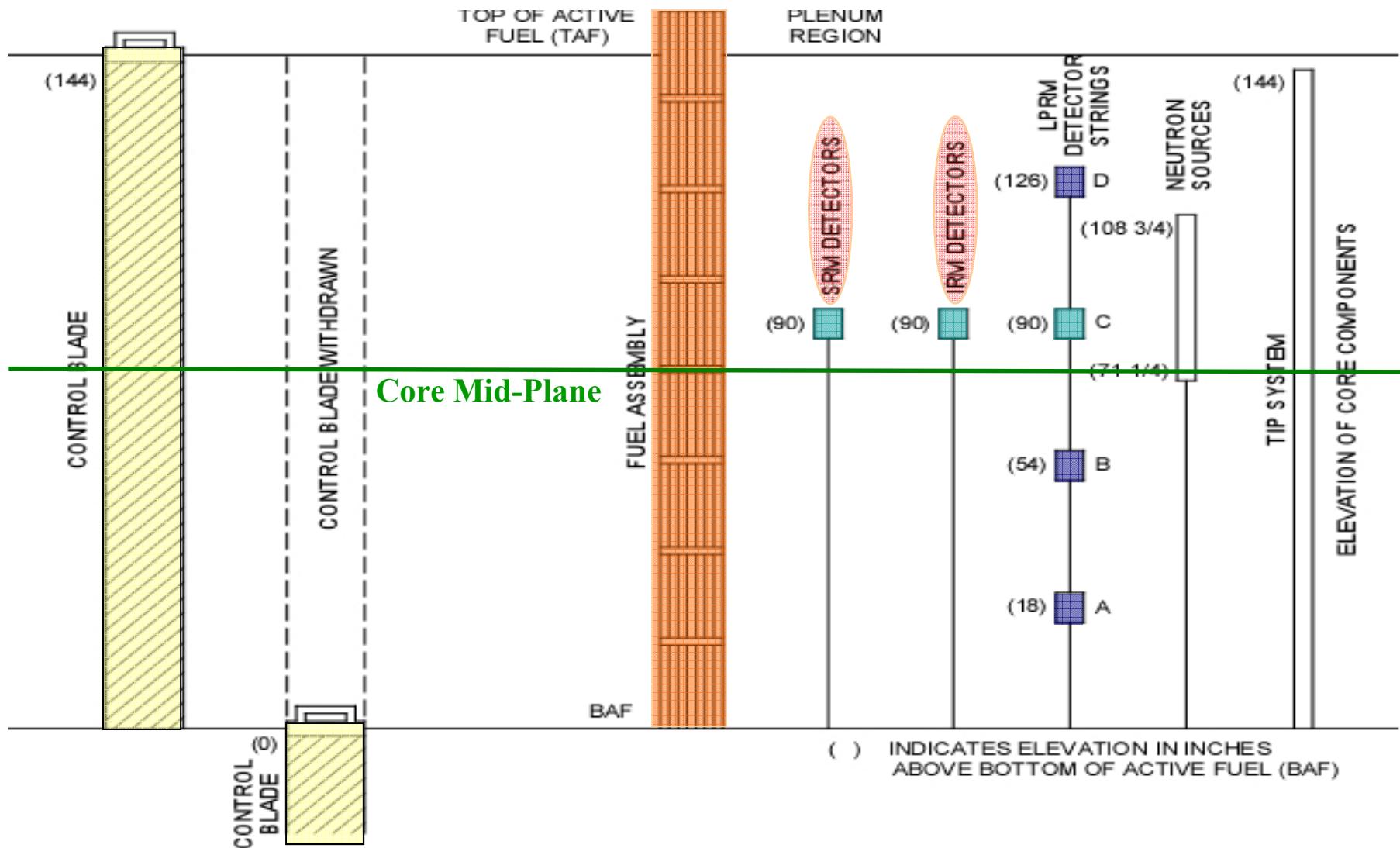
- The Local Power Range Monitor (LPRM) System provides signals proportional to the local neutron flux
 - The LPRMs measure the local flux at various radial and axial incore locations.

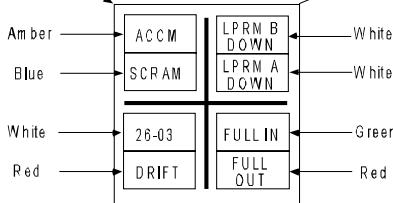
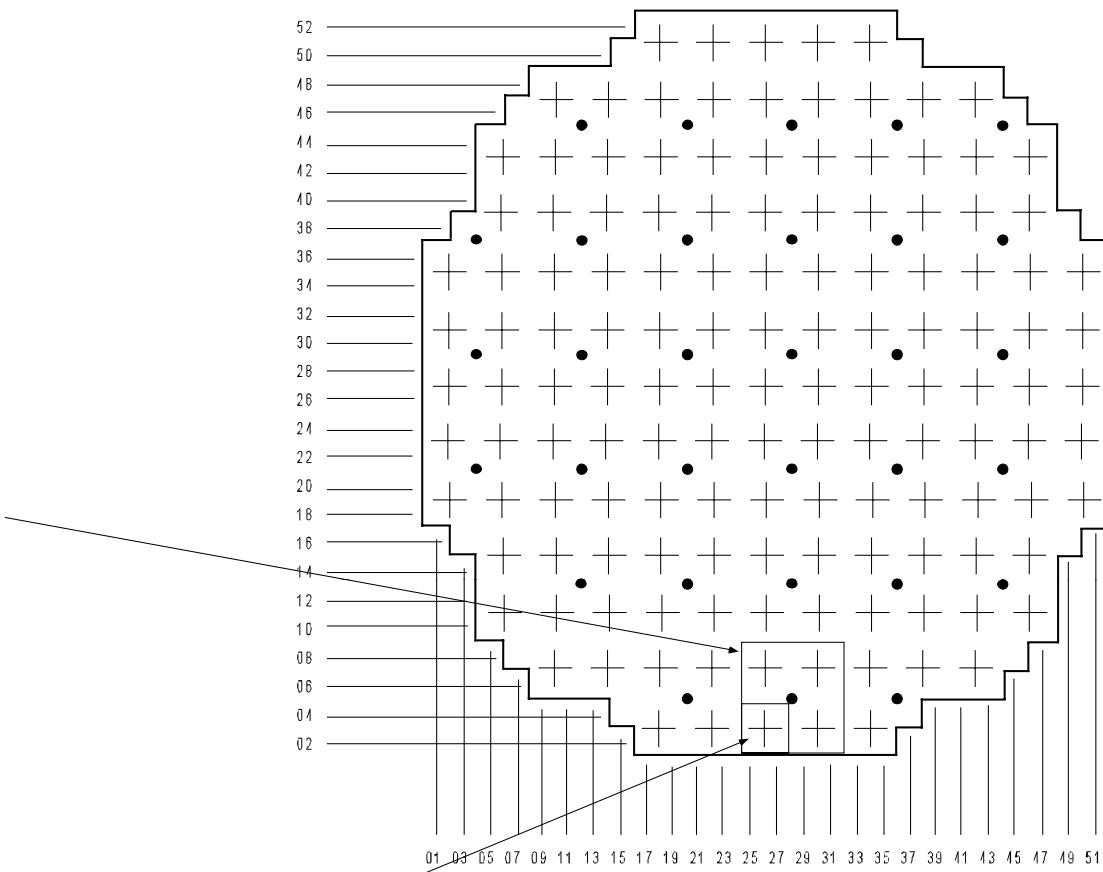
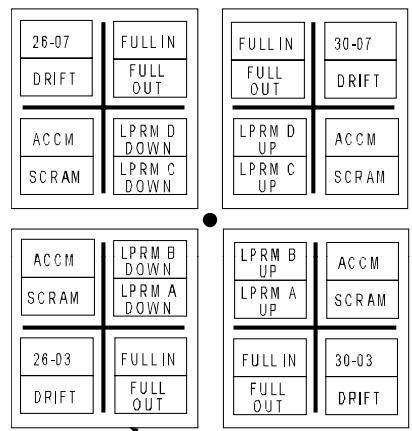
Detector and Control Element Arrangement



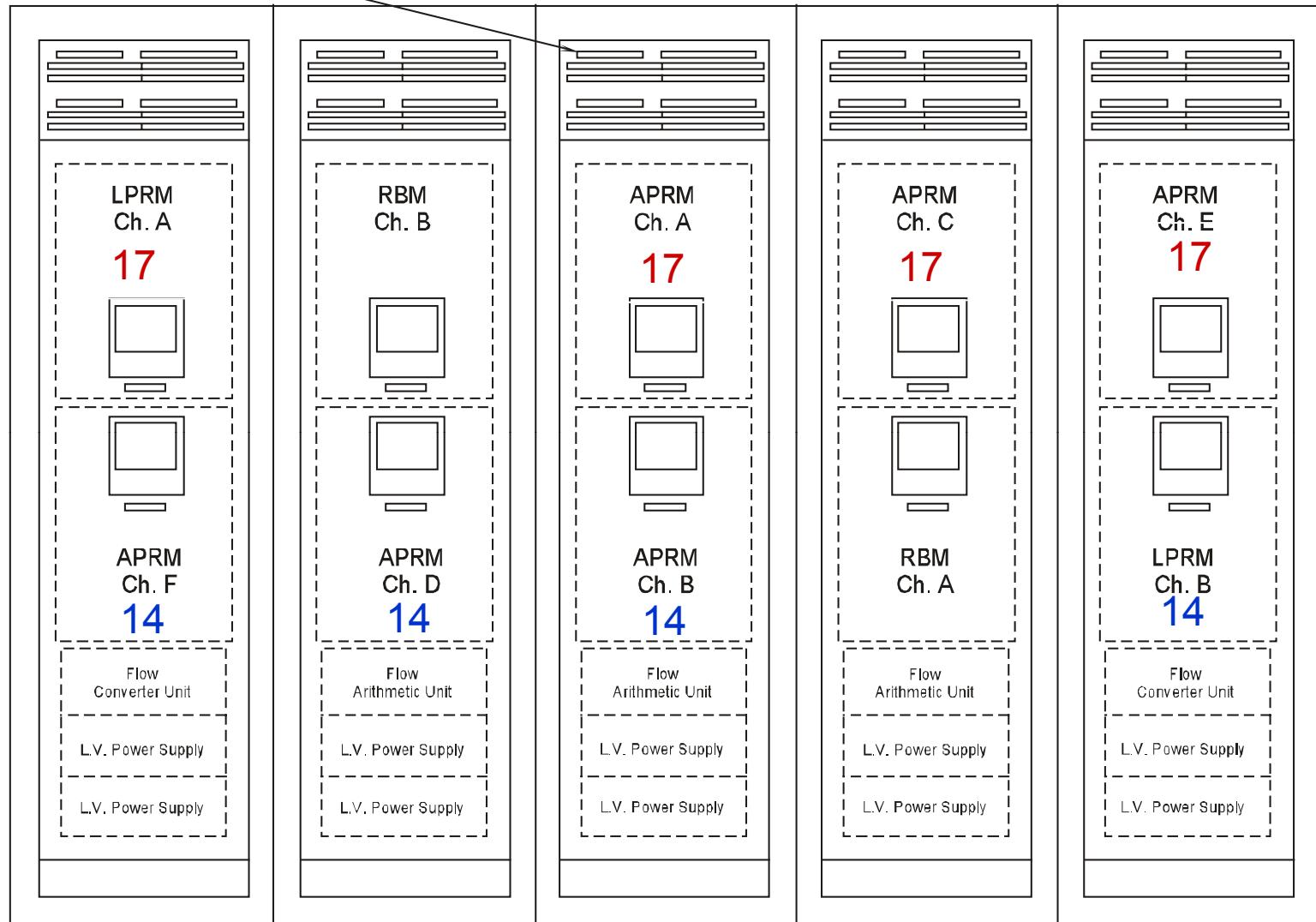
Axial Arrangement of Neutron Monitoring System Components

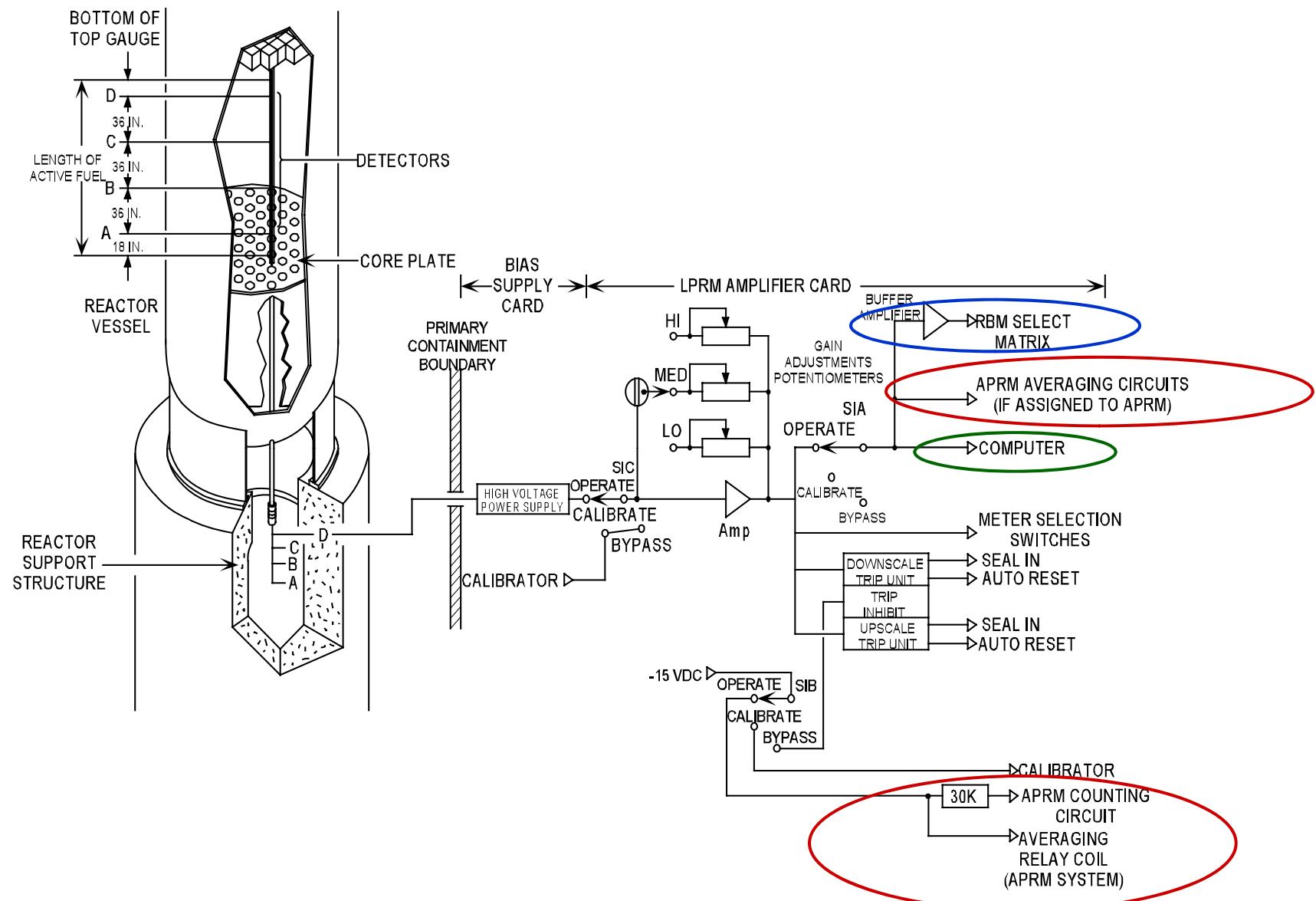
Figure 5.0-3





Indicator Lights





LPRM calibration

- LPRM's are calibrated using the TIP system
- TIP provides local flux at each detector
 - Flux amp range switch or gain adjust pot are used to adjust LPRM reading to match TIP signal
- LPRM detectors are calibrated due to depletion of U235 in the detector
 - LPRM calibration is required every 6 to 8 weeks

System Interfaces

Average Power Range Monitoring System (Section 5.4)

- Receives LPRM inputs to determine average core power.

Rod Block Monitoring System (Section 5.5)

- Receives inputs from the LPRM assemblies surrounding the control rod selected for movement.
- These LPRM inputs are used to calculate average local flux near the control rod.

Reactor Protection System (Section 7.3)

- Provides electrical power to the LPRM System via the assigned APRM or LPRM cabinets.

Traversing Incore Probe System (Section 5.6)

- Provides signals for use in the calibration of the LPRM detectors.

Process Computer System (Section 6.1)

- Receives LPRM detector inputs for various core performance calculations.

OBJECTIVE REVIEW

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4. Explain the interfaces this system has with the following plant systems:
 - Average Power Range Monitoring System (Section 5.4)
 - Reactor Protection System (Section 7.3)
 - Rod Block Monitoring System (Section 5.5)
 - Traversing Incore Probe System (Section 5.6)
 - Process Computer System (Section 6).